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BIOLOGICAL SOCIETY OF WASHINGTON

THE GENERIC DISTINCTION OF THE
HISPANIOLAN WOODPECKER, *CHRYSERPES*
STRIATUS (AVES: PICIDAE)

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The Hispaniolan Woodpecker, *Chryserpes striatus*, is the only resident woodpecker on an island of nearly 30,000 square miles area. Throughout most of its taxonomic history it has been considered a member of the *Centurus* group of barred-backed woodpeckers now often included in the genus *Melanerpes*. Miller (1915) recognized the distinctiveness of *striatus* and created for it the monotypic genus *Chryserpes*. This name found some usage at first, but Peters (1948) did not recognize it and *striatus* subsequently resided in *Melanerpes* (or *Centurus*) unchallenged.

In 1963, Selander and Giller reviewed the genus *Centurus*, including *striatus*. Of this species they said (p. 256), "without question it is not closely related to any species of [*Centurus*] or of *Melanerpes*, and there would seem to be much justification for placing it in its own monotypic genus, *Chryserpes*. . . ." They speculated that there might be some possibility of its being allied to *Piculus*.

Bond (1963) took issue with the judgment of Selander and Giller. "Granted that *C. striatus* is an aberrant species of *Centurus*, its affinity with that genus is clearly felt by ornithologists with experience of this bird in life," (Bond, 1963:6). He cited his own field observations and those of Wetmore and Swales (1931) as confirming the behavior of *striatus* to be like that of *Centurus*. Selander (*In* Bond, 1964:7) later wrote Bond as follows . . . "I was in Hispaniola last summer and spent about 2 weeks working with the woodpecker. I am sure that *striatus* is a melanerpe type, and in fact I have no objection to putting

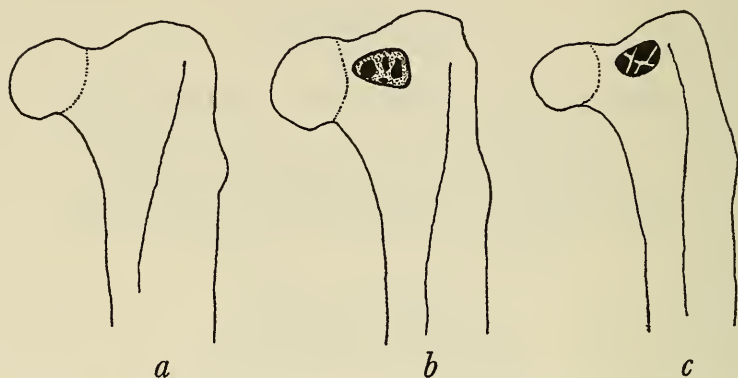


FIG. 1. Proximal femur, anterior aspect. a. *Melanerpes superciliaris*. b. *Chryserpes striatus*. c. *Xiphidiopicus percussus*.

it in *Centurus*. However, it is, as you noted recently, a somewhat aberrant species." Here the matter has rested, with the taxonomic fate of *striatus* apparently being decided on the basis of rather subjective assessments of its general demeanor.

Quite by accident I was led to investigate certain aspects of the osteology of *striatus* which fully confirm the views expressed by Miller (1915) and by Selander and Giller (1963). The species shall hereinafter be referred to under the name *Chryserpes*. In the course of identifying subfossil bone material from cave deposits in Haiti, I discovered that in *Chryserpes* there is a large pneumatic foramen in the anterior face of the neck of the femur. This is a feature that occurs in but few other families and is not characteristic of the Picidae. Subsequent checking disclosed such a foramen in only one other species of picid, the Cuban Green Woodpecker, *Xiphidiopicus percussus* (see Appendix for species examined). *Xiphidiopicus* is a monotypic genus restricted to Cuba. In all 12 specimens of *Chryserpes* and two of *Xiphidiopicus* examined, the anterior femoral foramen was a more or less regular ellipsoid lying transverse to the line of the shaft (Fig. 1). It is variable in size and shape but is always large and conspicuous.

A pneumatic foramen of somewhat similar position and extent may be found elsewhere only in the Upupidae, Phoeniculidae, Bucerotidae (where it is much reduced), Trogon-

idae, and Musophagidae. The anterior proximal femur is also pneumatic in the Sulidae, Ciconiidae, Phoenicopteridae, Anhimidae, Cathartidae, Sagittariidae, Accipitridae, Falconidae, Megapodiidae, Phasianidae, and Tetraonidae, but in these groups the foramina are longitudinally oriented in the trochanteric ridge and are seldom regular in outline.

A pneumatic opening is found in the *posterior* face of the femur beneath the ridge of the neck in a number of picid genera (e.g. *Celeus*, *Mulleripicus*, *Dryocopus*, *Dinopium*, *Campephilus*, and *Phloeocastes*). In many woodpeckers this is reduced to a tiny pinhole, and as such, is present in *Melanerpes*, *Chryserpes*, *Xiphidiopicus*, and numerous other genera.

From dissection of two specimens of *Chryserpes*, it was apparent that a branch of the air sac system passed into the anterior pneumatic foramen of the femur. This branch communicated with a small foramen in the pelvis directly anterior to the acetabulum and may possibly have had other ramifications down the shaft of the femur and under the pubis. The foramen anterior to the acetabulum is also present in *Melanerpes* and other picid genera. In a dissection of a specimen of *M. superciliaris*, the pneumatization of the area around the head of the femur appeared to be reduced compared to *Chryserpes* and, of course, there was no communication directly into the femur as in that genus. However, tracing small branches of the air sac system is notoriously difficult and can be carried out effectively only by special methods such as latex injection of fresh specimens. More conclusive results could not be obtained from the specimens at hand.

It is difficult to perceive what advantages might accrue to *Chryserpes* and *Xiphidiopicus* by having this pneumatic modification of the femur. Regardless of its function, however, it would not seem to be a primitive character, as it is not found elsewhere in the order, even in the more primitive families. Its presence in *Chryserpes* and *Xiphidiopicus* can only be regarded as a specialization and one that speaks strongly for the affinity of the two.

With this novel view in mind, it becomes of interest to compare the skulls of *Chryserpes*, *Xiphidiopicus*, and *Melanerpes*. Here again we find that the skull of *Chryserpes* is unlike

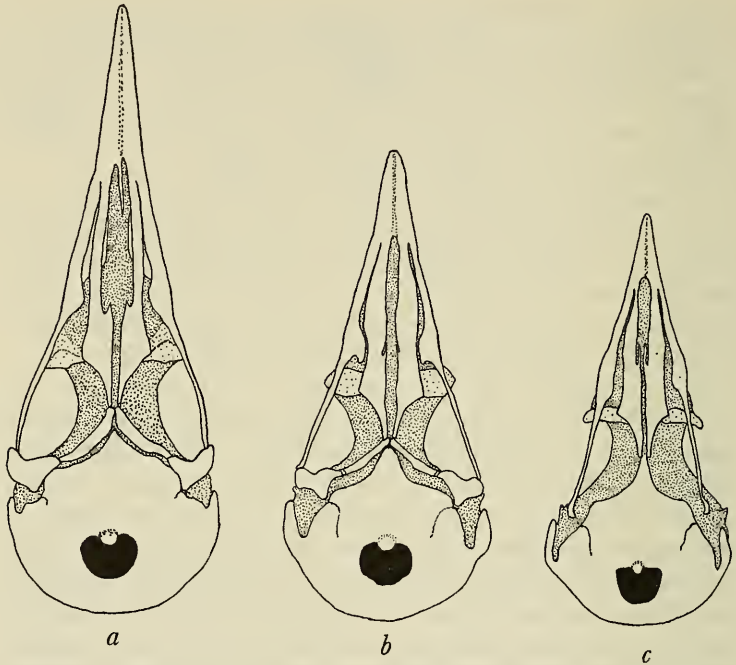


FIG. 2. Ventral aspect of skull. a. *Melanerpes superciliaris*. b. *Chryserpes striatus*. c. *Xiphidiopicus percussus* (lacking quadrates and pterygoids; size difference from *Chryserpes* is due to the specimen's being of the small race from the Isle of Pines).

any species of *Melanerpes* and most closely resembles that of *Xiphidiopicus*. The bill of *Chryserpes* is broader and flatter than any of the *Centurus* group of *Melanerpes* (it is, however, exceeded by *M. cruentatus* in relative width). This is especially noticeable in the internarial bridge which is broad and flattened in *Chryserpes* and *Xiphidiopicus* and narrower and rounded in the *Centurus* group.

In ventral view (Fig. 2) the anterior portions of the palatines in *Chryserpes* are much more expanded and flattened than in any species of *Melanerpes* but resemble the condition found in *Xiphidiopicus*. Also, in both *Chryserpes* and *Xiphidiopicus*, the pterygoids are more slender and lack the winglike expansions seen in *Melanerpes*.

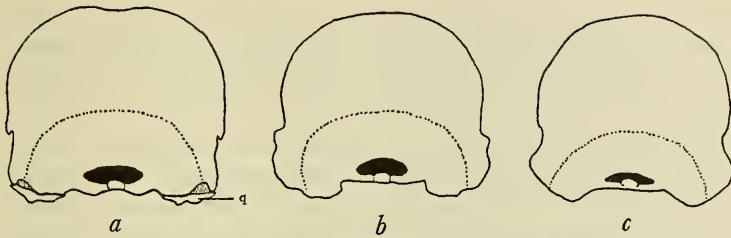


FIG. 3. Posterior aspect of skull. a. *Melanerpes superciliaris* (q = quadrate). b. *Chryserpes striatus*. c. *Xiphidiopicus percussus*.

Most striking is the posterior aspect of the skull. In *Chryserpes* and *Xiphidiopicus* (Fig. 3b, c) the cranium is a high rounded dome, whereas in all *Melanerpes* the cranium is squared and flatter on top with a distinct longitudinal furrow in the middle (Fig. 3a). Even more impressive is the great lateral and ventral expansion of the auditory region exhibited by *Chryserpes* and *Xiphidiopicus*. In these two genera the auditory bulge is the widest point of the skull, extending laterally past the plane of the postorbital processes and ventrally far enough to obscure the quadrates. In *Melanerpes*, the auditory region is much less well developed and does not obscure the quadrates in posterior view. In this genus the widest point of the skull is at the postorbital processes.

A lateral view of the auditory region shows further the much greater development of *Chryserpes* (Fig. 4b) and *Xiphidiopicus* (Fig. 4c) as compared to *Melanerpes* (Fig. 4a). The lateral portion of the otic cup is a short spur in *Melanerpes*, a large, well-developed pointed projection in *Xiphidiopicus*,

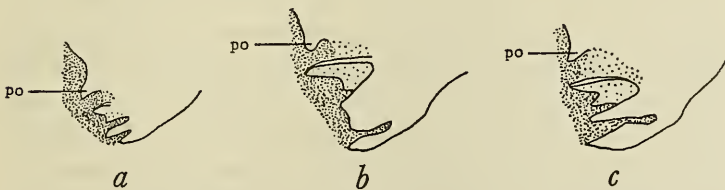


FIG. 4. Lateral aspect of left auditory region. a. *Melanerpes superciliaris*. b. *Chryserpes striatus*. c. *Xiphidiopicus percussus*. The post-orbital process (po) is indicated for orientation.

and a broad, rounded flange in *Chryserpes*. The ventral portion of the otic cup is most extensive in *Xiphidiopicus*, somewhat less so in *Chryserpes*, and negligibly developed in *Melanerpes*.

The external peculiarities of *Chryserpes* have been discussed by Selander and Giller (1963) and enumerated in detail by Miller (1915). In plumage, *Chryserpes* differs from *Melanerpes* and agrees with *Xiphidiopicus* by its greenish coloring, barred outer webs of the primaries, and by the red anterior crown of the males being replaced by black in the females. The anterior crown is black in females of a few species of *Melanerpes*, but in these, the entire dorsum is also black. The black crown of female *Xiphidiopicus* is streaked with white, and it is interesting to note that in some females of *Chryserpes* the shafts of the black crown feathers are also very narrowly streaked with white. This condition is not found in *Melanerpes*.

Chryserpes differs from both *Melanerpes* and *Xiphidiopicus* in its red upper tail coverts, unbarred flanks and undertail coverts, and bright yellow iris. It differs further from *Xiphidiopicus* in lacking the black chin and ocular stripes, red throat patch, and streaked breast, and in having a shorter crest and longer, narrower and more pointed rectrices that lack barring.

In both *Chryserpes* and the *Centurus* group of *Melanerpes* the dorsum and wings are barred and this has no doubt been the major factor masking the true affinities of *striatus*. Selander and Giller (1963:256) commented that this character "was probably acquired independently in *Chryserpes*, the resemblance to species of *Centurus* being a matter of convergence." With this I heartily concur, especially in view of the fact that a barred dorsum occurs in other groups of woodpeckers.

The reputedly "melanerpine" appearance of *Chryserpes* in life may be in part due to its being the only resident woodpecker on Hispaniola. Thus it probably occupies a much wider range of habitats and niches than it might if faced with melanerpine competitors, and in so doing may have independently acquired some behavioral similarities to *Melanerpes*. It is worthwhile to note that Wetmore and Swales (1931) reported that *Chryserpes* was not heard to produce the "rattling drum" characteristic of species of *Melanerpes*.

On the basis of available information there is little indication that *Chryserpes striatus* is in any way related to *Melanerpes* and every indication that it is not. Its closest relative is certainly *Xiphidiopicus percussus*, and this affinity is quite tenable on zoogeographic as well as morphological grounds. The differences in plumage, rectrices, and auditory region of the skull I think justify the retention of monotypic genera for both *Chryserpes* and *Xiphidiopicus*.

Although it is not my intention to deal in this paper with the broader aspects of picid taxonomy, it is necessary to consider the possible relationships of *Chryserpes* and *Xiphidiopicus* outside the Antilles. Pertinent to this topic is the most interesting discussion by Short (1970) on the affinity of certain African and Neotropical woodpeckers wherein Short also presents some preliminary views of his classification of the Picidae. He considers the African genera *Campethera*, *Geocolaptes*, and *Dendropicos* (including *Thripias*, *Polipicus*, and *Mesopicos*) to be related to the New World "colaptine" woodpeckers, *Colaptes*, *Piculus*, and *Veniliornis*. Short also states (p. 37) that, "The peculiar, generalized and exclusively New World melanerpine group of woodpeckers (*Melanerpes*, *Xiphidiopicus*, *Sphyrapicus*; Bock and Short, Ms) may be a derivative of an early, generalized stock of woodpeckers that gave rise to colaptine and campetherine woodpeckers. I note the similarity of certain African woodpeckers, especially *Dendropicos goertae* and *D. griseicephalus*, with various species of *Melanerpes* (e.g. *M. striatus*)." Reasons for placing *Xiphidiopicus* with the melanerpine group are not given. However, neither *Chryserpes* nor *Xiphidiopicus* could fairly be called "generalized" and their similarities to *Melanerpes* are very superficial while the differences are quite profound.

I would remove *Xiphidiopicus* and *Chryserpes* entirely from the melanerpine group and place them in or near the campetherine-colaptine assemblage. When this is done, the resemblance between the melanerpine group and the campetherine-colaptine group is considerably diminished. On the other hand, resemblance of *Chryserpes* and *Xiphidiopicus* to the campetherine-colaptines is strong and almost all the plumage characters of the Antillean genera may be found in one or another of the

mainland genera of this group. The females with black crowns marked with white, the greenish coloring, and the barred outer primary webs of *Chryserpes* and *Xiphidiopicus* are also seen in the campetherine line but not in the melanerpinines. The same is true of the scarlet rump of *Chryserpes*. The barred dorsal plumage previously thought to ally *Chryserpes* with "*Centurus*" is also present in some campetherines (e.g. *Dendropicos fuscescens* and *Colaptes*). While distinct in themselves, the skull characters of *Chryserpes* and *Xiphidiopicus* are much more similar to the campetherine line than to the melanerpinines to which they show little resemblance.

The two endemic Antillean genera, *Xiphidiopicus* and *Chryserpes* are unquestionably more closely related to each other than either is to any existing mainland form. They probably represent the result of a single invasion of the Antilles by some campetherine-colaptine stock. Their distinctiveness argues well for their being the oldest picid inhabitants of the West Indies (with the possible exception of the piculet, *Nesocittes*) and this is concomitant with the presumed relatively great age of the campetherine-colaptine line emphasized by Short.

I am grateful to Richard L. Zusi, John Farrand, and Alexander Wetmore for suggesting several valuable improvements in the manuscript.

RESUMEN

Algunos caracteres del cráneo, del fémur, y de la plumaje muestran que el Carpintero de Hispaniola, *Chryserpes striatus*, no tiene afinidad con *Melanerpes* donde usualmente se encuentra. En lugar de esto, es más cerca al Carpintero Verde, *Xiphidiopicus percussus*, de Cuba. El género *Chryserpes* es válido por la especie *striatus*. *Chryserpes* y *Xiphidiopicus* probablemente representan la línea más vieja de los carpinteros antillanos. Sus relaciones aparecen ser con el grupo "*Campethera-Colaptes*" y no con el de *Melanerpes*.

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APPENDIX

The following list is of the species of Picidae in the National Museum of Natural History, Smithsonian Institution, collections examined for the anterior pneumatic foramen in the neck of the femur and found to lack it. Number of specimens follows the name:

Jynx torquilla, 1; *J. ruficollis*, 2; *Picumnus exilis*, 1; *P. aurifrons*, 4; *P. cirratus*, 1; *Nesocittes micromegas*, 2; *Verreauxia africana*, 2; *Colaptes auritus* (including *cafer* and *chrysoides*), 22; *C. pitius*, 2; *C. campestris*, 1; *Nesocleus fernandinae*, 1; *Chrysoptilus melanochloros*, 1; *Piculus rivolii*, 2; *P. rubiginosus*, 1; *P. chrysochloros*, 1; *Campethera abingoni*, 1; *C. permista*, 2; *C. caroli*, 2; *C. nivosa*, 1; *Celeus lugubris*, 2; *C. castaneus*, 6; *C. elegans*, 1; *C. undatus*, 1; *C. flavus*, 1; *Micropternus brachyurus*, 2; *Picus viridis*, 1; *P. vittatus*, 4; *P. canus*, 10; *P. erythropygius*, 1; *P. flavinucha*, 1; *P. chlorolophus*, 1; *P. mentalis*, 1; *Dinopium bengalense*, 3; *D. javense*, 6; *Meiglyptes tristis*, 1; *Mulleripicus pulverulentus*, 2; *M. funebris*, 1; *M. fulvus*, 2; *Dryocopus martius*, 3; *D. javensis*, 4; *D. pileatus*, 9; *D. lineatus*, 8; *Asyndesmus lewis*, 1; *Melanerpes erythrocephalus*, 5; *M. formicivorus*, 9; *M. uropygialis*, 4; *M. carolinus*, 9; *M. aurifrons*, 8; *M. superciliaris*, 1; *M. radiolatus*, 1; *M. rubricapillus*, 8; *M. cruentatus*, 5; *Leuconerpes candidus*, 3; *Sphyrapicus varius*, 10; *S. thyroideus*, 2; *Trichopicus cactorum*, 1; *Veniliornis passerinus*, 4; *V. affinus*, 3; *V. kirkii*, 2; *Dendropicos fuscescens*, 7; *D. gabonensis*, 1; *Dendrocopos syriacus*, 1; *D. major*, 7; *D. leuconotos*, 2; *D. hyperythrus*, 1; *D. atratus*, 2; *D. macei*, 2; *D. canicapillus*, 2; *D. temminckii*, 1; *D. villosus*, 6; *D. pubescens*, 10; *D. borealis*, 4; *D. arizonae*, 1; *D. scalaris*, 4; *D. nuttallii*, 5; *D. lignarius*, 4; *Picoides tridactylus*, 1; *P. arcticus*, 1; *Thripias namaquus*, 2; *T. xantholophus*, 2; *Chrysocolaptes lucidus*, 3; *Phloeocastus melanoleucus*, 7; *P. rubricollis*, 2; *P. leucopogon*, 1; *Campephilus principalis*, 4; *C. imperialis*, 3; *C. magellanicus*, 2.

